CHAPTER 6

ANALYSIS OF THE INCLUSION OF SUSTAINABLE DEVELOPMENT IN POSTGRADUATE STUDIES IN MEXICO[1]

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ABSTRACT: The scientific research project to build an Observatory of Sustainable Development in Postgraduate Study Plans in Baja California, as an Initial Phase. It will allow a systemic analysis to be carried out in Higher Education Institutions that incorporate the dimension of sustainability in their Study Plans, through teaching, research and university management. To establish the variables for the development of an electronic survey that yields information as a tool for the analysis of the culture of sustainability and inclusion in the current university model. The project has three objectives: 1) Determine the level of culture of Sustainable Development, 2) Evaluate the implementation of Sustainable Development Goals in Postgraduate Study Plans, 3) Design the prospective variables for an Observatory of Sustainable Development. The United Nations 2030 Agenda promotes sustainable development: the social, economic and environmental dimensions. To promote in society a culture and awareness of learning about Sustainable Development and the benefits for quality of life and comprehensive development in society. Research based on the Systemic Fifth Helix Methodology [QHS in Spanish], involving sectors of Government, Academia, Companies, Organizations-Associations and specialized Consultants.

KEYWORDS: Sustainable Development, 2030 Goals, QHS Methodology, Sustainable Education, Social Economy, Circular Economy.

1. INTRODUCTION

The research work documented in this chapter represents the systematized efforts of researchers with multidisciplinary approaches and inter-institutional cooperation efforts. The National Technological Institute of Mexico (TecNM Campus Tijuana) through the efforts of the Department of Economic and Administrative Sciences, the Division of Postgraduate Studies and Research and the Coordination

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of the Doctorate Project in Administration have strategically defined a line of research on Sustainable Development of according to the guidelines of the National Strategic Programs (PRONACES) of the National Council of Science and Technology (CONACYT) as a requirement for the opening of new postgraduate programs at the national level in Institutions of Higher Education, to obtain the Recognition of the National Postgraduate Program of Quality (PNPC).

The strategic articulation generated with the Autonomous University of Baja California Tijuana Campus and its Faculty of Accounting and Administration was developed through a cooperation agreement and coordinated work with a research project oriented to the Circular Economy and the study of Sustainable Development for the Analysis in SMEs in the City of Tijuana.

The postgraduate program of Master in Administration of the National Technological Institute of Mexico Campus Tijuana, with a history of more than 25 years, has become the space and benchmark for applied research in Economic and Administrative Sciences, being the benchmark for intervention models, Unit of Verification of Municipal Development according to the Global Agendas such as the Sustainable Development Goals (SDG), for their respective evaluation and feedback to the representatives of the Municipalities of the State of the Government of Baja California.

The University of Guadalajara through the International Center for Social Innovation for Development has generated collaborative actions of experiences developed in the Municipalities of the State of Jalisco.

The academic link and applied research of the TecNM Campus Tijuana have been characterized by leadership and the convocation of Professors, Researchers, Specialists, Researchers and Representatives of the Social Sector. The objectives of collaborative work have generated academic and outreach productivity, as well as Social Economy Forums, Sustainable Development Seminars with interventions by Specialists at the local, national and international level. In order to lay the foundations and cultivate the research line of the future postgraduate program of Doctorate in Administration, a National Research Project is being developed, entitled: Observatory of Sustainable Development in Postgraduate Study Programs in Baja California. The scientific research project is registered in the call of the Technological National of Mexico. And the purpose is to eventually generate the model that can be replicated at the regional and even national and international levels according to the Global Agendas for raising awareness of Sustainable Development from the Higher Education Sector.

The circular economy as a term of reference and practice oriented towards a virtuous cycle of raw materials through recycling waste has its reference point chronologically since the 1980s. Associating the circular economy with creative

initiatives. Likewise, as a point of reflection of the impact of the growing demand for non-renewable raw materials and with an impact on the environment and the economy of society. Circular Economy (CE) is a new concept characterized by processes associated with research, development and innovation that challenges the linear economy model that several developing countries, towards paradigm changes in the production processes of waste management. raw materials, and actions to prolong the virtuous cycle of recycling, reuse and reduce raw materials in production processes. Seeking with it, models of culture and adaptation of good sustainable development practices in organizations, and properly in all stages of the supply chain; suppliers, producers and customers [1].

The development of the research note starts from the prospective of the objective of the scientific research project to lay the methodological bases that respond to the research question: ¿What are the variables to determine the level of culture on the Sustainable Development Goals (SDG)? to build an Observatory for the evolution of the SDGs [2] and Circular Economy under the local territorial approach in the municipalities, from an academic perspective. The documentary analysis of studies at the international level as a reference framework to identify best practices in business awareness and education in the new generations for the development of programs and initiatives to promote Sustainable Development, is connected with the structure of the NODESS [3] model (Development Nodes of Social and Solidarity Economy) that represents the articulation of Institutions of Higher Education, Local Government (Municipalities) [4] and the Organism of the Social Economy (Cooperatives and Cooperative Associations), generating experiences of coexistence and education for life, through the identification of needs , projects and innovation in the city of Tijuana and its metropolitan area; carrying out action strategies that comply with four strategies aimed at: 1. Research, 2. Dissemination, 3. Dissemination and 4. Publication.

The work team made up of academics, researchers, municipal officials and members of cooperatives develop responsibility and strategic leadership in matters of research, dissemination, entrepreneurship and capacity development, linkage, follow-up and monitoring. Through a training and orientation program in the Communities on the 17 SDGs and Circular Economy. This includes a program of meaningful learning practices to promote a culture of awareness of the sustainable development approach that involves three main spheres in perfect balance: 1. Economy, 2. Social aspect and 3. Environment. And under the methodological practices of systemic focus groups, an inventory of good practices and a catalog of projects that affect the circular economy are developed, as well as Sustainable Development under the analysis of the contents of Study Plans aligned to sustainable culture. With the results of the prospective research on the needs of culture and

education on circular economy, Dictionaries of Sectoral Competences (DSC) [5] will be designed that include labor, professional and research competences, as an empowerment strategy in the different levels of education from basic education up to postgraduate level. Having an emphasis on the importance of transmitting to future generations of citizens in the different sectors of society, from a Family Father, an Entrepreneur, a Professional, a government official or the population in general.

2. DESIGN AND METHOD

FHS systemic intervention model for SDGs and Circular Economy

The Fifth Systemic Helix (FHS) Methodology [6] for the analysis of Sustainable Development and Circular Economy has been developed on the approach of systemic competitiveness, emphasizing research, development and innovation; as a sectoral articulation factor. The QHS methodology generates a series of strategic actions and initiatives to achieve public policy [7, 8] initiatives and communication mechanisms that can give continuity to projects, with the aim of having a more developed society with a developing culture and education. sustainability and the impact of the SDGs, as well as sensitivity to the principles of the circular economy.

The project of a "Social Economy Observatory in Latin America" creates prospective reflection on the structural conditions necessary for indicators that are the formula to determine the gaps of reality vs. the ideal phase, which generate as a result the areas of opportunity for each sector of society through the QHS approach [9]. The systemic methodological proposal considers in-depth interviews of the opinion context on local projects and their impact on the Sustainable Development Goals (SDG) and the Circular Economy [10].

Table 1 presents a series of questions developed as a reflection strategy to create specific actions in the different sectors of society to generate culture and awareness of the importance of the objectives for sustainable development (SDG) and the circular economy [11].

Focus FHS	Bank of questions by systemic sector
H1. Companies	❙ What are the problems or challenges of the business sector to develop projects and initiatives for SDGs and circular economy? ❙ What are the barriers that companies face to implement circular economy projects? ❙ Are companies aware of the best circular economy practices? ❙ Have the consultants contributed to implementing circular economic initiatives? ❙ What do companies need to open up to educational linkages for the circular economy? ❙ How can companies be linked with the different sectors of society, to improve the conditions of the circular economy? ❙ Do companies consider some type of occupational profile for job skills, professionals and research on circular economy? ❙ How can service providers contribute to circular economic practices in companies? ❙ What kind of help do companies need to develop local technology with support from the government and schools to implement circular economy projects? ❙ What is the profile of a successful company, with circular economic practices?
H2. Universities	❙ What are the knowledge and skills (competencies) provided in the Schools for SDGs and circular economy? ❙ How do Universities update their study plans and programs in accordance with the advances and development of the SDGs and the circular economy? ❙ How are teachers updated to teach the current issues of SDGs and circular economy? ❙ How do you measure the effectiveness of your study programs, according to the SDG and circular economy development indicators? ❙ How is the link between the education sector and companies promoted to develop SDG and circular economic projects?
H3. Government	❙ What are the government programs to promote the development of SDGs and circular economy? ❙ How does the government facilitate the development of suppliers with an SDG and circular economy approach? ❙ What does the government need to develop public policies that encourage SDGs and circular economy? ❙ What initiatives has the government developed to promote each SDG and circular economy? ❙ What strategic actions is the government developing in the short, medium and long term for SDGs and the circular economy? ❙ What failures does the government recognize that it has had to achieve the progress of the SDGs and the circular economy? ❙ Is there a local or national agenda for the development of SDGs and circular economy?
H4. Associations	❙ What are the strategies of business associations to help companies and suppliers develop and implement actions aimed at SDGs and the circular economy? ❙ What programs have business associations generated and encouraged to promote SDGs and the circular economy? ❙ How is research on SDGs and circular economy promoted? ❙ How is communication between companies promoted to promote SDGs and the circular economy? ❙ How is the certification of labor, professional and research skills promoted on awareness and culture on SDGs and circular economy?

H5. Consultants	❙ What is missing in educational institutions so that their graduates are more focused on the culture and principles of SDGs and circular economy? ❙ What actions are recommended to the government sector to strengthen the business sector and its supply chain, and develop circular economy programs? ❙ What initiatives are considered necessary for business organizations and chambers to be a key actor or agent of change in the development of SDGs and circular economy? ❙ What are the professional services that specialized consultants should provide to promote awareness and culture about the importance and benefit of developing projects on SDGs and circular economy?

Table 1 Bank of questions to determine the SDG and circular economy project.

The conceptual definition of sustainable development is argued from three perspectives on the relationship between the environment and economic and social development. The conceptual genesis of sustainable development is based on the principles of allowing the needs of present generations to be met without compromising the possibilities of those of the future, of meeting their own needs, and meeting an environmental protection agenda in countries with lower levels of developing. They need development of environmental policies and development strategies in their economic and social and environmental sectors.

The institucional framework for sustainable development and the green economy and the eradication of poverty, as an idea of a paradigm shift necessary to protect the environment, can also generate new opportunities for economic growth, an important issue at the time of international crisis [12]. ECLAC has focused this message from the equality trilogy, in particular on "Structural change for equality: an integrated vision of development" and "Pacts for equality: towards a sustainable future". Table 2 presents the opinion methodological approach of the role of interviewees under focus groups in five phases:

Phases	Systemic Analysis Approach
1	Public policy makers: Development of instruments to identify and develop models: incentives, cooperation structures, financing of research projects, aid to promote sustainable development and good circular economic practices, through the virtuous circle of waste recycling.
2	Experts; People with extensive knowledge and experience to achieve an impact on the objectives of sustainable development and circular economy.
3	Business leaders: University-company linkage programs that have professional practical goals, social service, thesis on SDG projects and initiatives and circular economy.
4	Universities: They play a fundamental role in the transfer of technology and knowledge, through research, development and innovation, articulated with all the needs of the sectors of society.
5	Representatives of Civil Society: Worktables with citizens, they are already the key piece of any city project, or of a country, through their needs, business vocations and the capacities of the talent trained in the various educational institutions.

Table 2 Methodological approach of the QHS for SDGs and Circular Economy

A circular economy, he added, extends the life of the product, with maintenance, repair, reuse and remanufacturing, and when it is no longer possible to do any of these things, recover parts that can be reused or, at least, rescue the materials or raw materials. The border dynamics of the region between the cities of Tijuana, Baja California and San Diego, California, generates a business dynamic called CALIBAJA, in which activities of recovery of parts and materials are developed, with initiatives of a circular economy law in the business activities of the metropolitan region and the international link will provide a regulation that facilitates second-hand trade, initiatives of technological circles, and not leave the responsibility of processing our waste, generated by society, to mother nature alone.

The international reference framework according in Chile there are innovative circular economy practices; such is the case of virtuous recycling of cigarette butts, recycling of glass bottles into glasses, development of glasses, using the plastic collected from fishing nets. Likewise, a review and construction of a theoretical reference framework on applied research in SDGs and Circular Economy as shown in Table 3, the advancement of good practices documented in academic studies [13].

Country	Best methodological practices	Ref.
Mexico	Systemic model QHS-DCS, QHS-NODESS, for the interaction of creators of government policies, business leaders, representatives of universities, associations and specialized experts from civil society, to determine the level of culture and sensitivity of actions to contribute to the scope of the SDGs and Circular Economy, identifying needs for labor, professional and research skills in the sectors of society.	[14]
Colombia	Initiatives aimed at promoting extended responsibility between producers, manufacturers and importers of goods and services.	[15]
Chile	Extended responsibility of the producer, until the end of the useful life of the product.	[16]
Japan	Exchange program between industries, promoting continuous improvement practices	[17]
European Union	Regulatory framework that allows the effective use of natural, human and economic resources for its transition to the Circular Economy model; waste can be recycled to transform waste from one industry into raw materials for another	[18]

Table 3 Actions aimed at achieving the SDGs and Circular Economy

International studies of advances in Implementing a circular economy at a global level is a complicated task, many rich countries do not want to give up their level and way of life. Poor countries seek to obtain a level similar to developed countries but do not have the resources. Some developed countries promote the Circular Economy through more artisanal jobs; activities of reuse, repair, remanufacturing, etc., including the substitution of non-renewable raw materials for recycled materials. But the concern is that the energy sources that are running out are very scarce. International statistics suggest that rich countries consume 10 times more resources

than poor countries. Which implies a culture and sensitivity to spread the principles of circularity.

Adaptation, reuse of used products, encourage recycling. Environmental management systems such as ISO 14001 have the task of demanding this type of change to ensure the sustainability of the resources we consume. Agreements, alliances, cooperation mechanisms are required to make possible the answer to the great unknown of how the less developed countries will face the implementation of these new infrastructures. Some developed countries have shown interest in supporting fewer wealthy nations; however, it is not enough if the aim is to implement a global circular economy. [19]

3. FIELD WORK AND DATA ANALYSIS

According to the UN the Sustainable Development Goals (SDGs) can only be achieved with strong global partnerships and cooperation. Inclusive partnerships need to be established at global, regional, national and local levels on sustainable principles, as well as on a shared vision and goals that put people and ecosystems first. Due to the global contingency of the COVID-19 pandemic [20], it is estimated that the world economy will contract by 3% in the coming years, representing the worst recession since the Great Depression. Cooperative actions are necessary to guarantee local recovery, under awareness and culture towards the Sustainable Development Goals (SDG). Highlighting its approach and way of addressing them from the different sectors of society: Goal 1: End poverty in all its forms throughout the world, Goal 2: End hunger, Goal 3: Guarantee a healthy life and promote well-being for all at all ages, Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, Goal 5: Achieve gender equality and empower all women and girls, Goal 6: Ensure availability and sustainable management of water and sanitation for all, Goal 7: Ensure access to affordable, secure, sustainable and modern energy, Goal 8: Promote inclusive and sustainable economic growth, employment and decent work for all, Goal 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation, Goal 10: Reduce inequality within and among countries, Goal 11: Make cities more inclusive, safe, resilient and sustainable, Goal 12: Ensure sustainable consumption and production patterns, Goal 13: Take urgent action to combat climate change and its effects, Goal 14: Conserve and sustainably use the oceans, seas and marine resources, Goal 15: Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss, Goal 16: Promote just, peaceful and inclusive societies , Goal 17: Revitalize the Global Partnership for Sustainable Development.

The Sustainable Development Goals (SDGs) are the heart of the 2030 Agenda; they represent the vision of the future we want. And the need for local and international collaboration through awareness and sustainable culture. The 17 SDGs with their 169 goals and 231 indicators, the Member States of the United Nations have firmly expressed that this agenda is universal and with a transformative approach. The agenda has the principle of common responsibilities and generates mechanisms to build alliances for all participating countries. The SDGs are universal: they constitute a universal reference framework and will apply to all countries. All countries have pended tasks and all face both common and individual challenges.

The SDGs are transformative: the 2030 Agenda proposes a paradigm shift from the traditional development model towards sustainable development: The new approach integrates the economic, social and environmental dimensions, sustainable development centered on people and the planet, based on human rights and human dignity. The SDGs are civilizing: The 2030 Agenda is about leaving no one behind. It contemplates universal respect for equality and non-discrimination among countries, without distinction of any kind as to race, color, sex, language, religion, political or other opinion, national or social origin, property, birth, disability or any other condition. The SDGs are also a local and national planning tool, as a monitoring instrument in the countries. Contributing to sustainable development, inclusive of the environment, with public policies for planning, budgeting, monitoring and evaluation.

4. RESULTS

The visible inequalities around the world have been a cause for great concern, since today there are around 828 million people living in poverty in the world, a figure that, like the levels of energy consumption and pollution, continues to increasing, because although cities occupy only 3% of the earth's surface, they represent between 60% and 80% of energy consumption and 75% of carbon emissions, according to data from the United Nations Organization. From this perspective, the concept of sustainable development emerges as a complex conceptual proposal that articulates the economic, environmental, social, political and cultural dimensions, within which issues such as equity, employment opportunities, access to goods of production, environmental impacts, social spending, gender equality, good governance, an active civil society in terms of social participation, among others, considering both quantitative and qualitative aspects of development [21].

Preliminary findings on studies of Circular Economy and awareness of SDGs reflect a rise in actions and good practices of programs for environmental management at the documentary research level, as well as local initiatives such as the NODESS

Tijuana project of the city of Tijuana with strategic links with researchers from the University of Guadalajara, Autonomous University of Baja California and the National Technological Institute of Mexico Campus Tijuana, determining in Table 4, the results of the percentage of involvement and commitment of the different sectors of society.

SDGs	Variables - Indicators	QHS-NODESS-CIRIEC	%
10, 11, 12, 16	Fund for education on sustainable development	Companies, Associations	10%
10, 11, 12, 16	Comprehensive supply chain recycling programs	Companies, Universities	40%
8, 10, 11, 12, 16	Circular economy awareness programs	Companies, Consultants	30%
17	Strategic sector coordination programs for SDGs of the UN 2030 Goals	Government with other sectors	20%

Table 4 Analysis of SDGs actions, Circular Economy vs QHS-NODESS

5. DISCUSSION AND CONCLUSIONS

According to the findings of the documentary and field research, the greatest efforts in tangible facts embodied in agreements, and documented programs are found between the Universities and Companies relationship. Generating the reflection that Higher Education Institutions represent the Agent of Change in societies beyond political discourse and good business intentions. Education is the engine of the training of new generations and the impact on the culture of sustainable development.

The opinion of international organizations such as the International Cooperative Alliance (ICA) [22] that there is a relationship between the Plan for a Decade, the social balance and the Sustainable Development Goals. Preliminary findings of reflection, there are several aspects in the inkwell of necessary agreements in the different sectors of society to achieve the culture of practices to develop in a manner in tune with the Sustainable Development Goals and thereby generate well-being and mitigate inequality in society and contribute to the improvement of the environmental conditions of our ecosystems that we cohabit.

In Latin America, 50% of solid waste is organic matter, of which 90% is not used or goes to waste. According to the Economic Commission for Latin America and the Caribbean, improving the efficiency and useful life of materials in our region would lead to the creation of five million jobs. The circular economy has been raised on the local, national and global agendas of public policy and private activity. Countries of Latin America and the Caribbean, and other regions in the world. The link between the circular economy and international trade has been little explored. According to

the literature review, trade flows of waste, analysis of the circular economy as trade policy. Necessary knowledge and technology transfer, design and development of training models and practical awareness models of the circular economy and the SDGs, in all sectors of society. [23].

The business sector, business associations and the education sector represent a fertile setting for the development of projects that promote practices for the Sustainable Development Goals (SDGs) and initiatives to implement programs aimed at the culture of circular economy. Likewise, a key aspect is the role of the sector of consultants specialized in projects and applied research, and the government sector through policies and awareness programs from the local government, through the combination of forms of articulation of efforts of the different sectors. of society. Generating and consolidating the sustainability of organizations and society. Positively impacting the economy, social aspects and the environment. The initiatives and projects on circular economy, require international cooperation, alliances between public and private sectors to create knowledge and technology transfer, as a great project of interest not only of speech, but of harmonization of definitions and norms and leaderships of unity for the benefit of future generations and the legacy of caring for the environment.

REFERENCES

[1] Kowszyk, A. & Maher, R. (2018). Casos de estudio sobre modelos de Economía Circular e integración de los Objetivos de Desarrollo Sostenible en estrategias empresariales en la UE. https://eulacfoundation.org/es/system/files/economia_circular_ods.pdf

[2] ONU (2015): Transformar nuestro mundo: la Agenda 2030 para el Desarrollo Sostenible, Resolución A/RES/70/1. Nueva York.

[3] Nodos de Impulso a la Economía Social y Solidaria NODESS (2022) https://www.gob.mx/inaes/acciones-y-programas/nodos-de-impulso-a-la-economia-social-y-solidaria-nodess-233732

[4] Ecosistema de Desarrollo Económico de Tijuana, Ayuntamiento Municipal (2020). https://www.tijuana.tecnm.mx/%EF%BB%BFitt-colabora-en-comision-de-economia-social-del-ecosistema-para-el-desarrollo-economico-de-tijuana/

[5] Martinez-Gutierrez R. (2020) Methodology of Dictionaries of Sector Competences (DCS), to Design Standards of Professional Competences, Research and Labor. In: Nazir S., Ahram T., Karwowski W. (eds) Advances in Human Factors in Training, Education, and Learning Sciences. AHFE 2020. Advances in Intelligent Systems and Computing, vol 1211. Springer, Cham. https://doi.org/10.1007/978-3-030-50896-8_46

[6] Martinez Gutierrez, R. (2012). Quinta Hélice Sistémica (QHS), un método para evaluar la competitividad internacional del sector electrónico en Baja California, México. Revista de Investigación Administrativa, 110, 34. https://searchworks.stanford.edu/articles/edsgii__edsgcl.405170452

[7] Martínez Gutiérrez, R. (2012). Quinta Hélice Sistémica, un modelo para el desarrollo de políticas públicas. Revista Cooperativismo y Desarrollo, 20(101), 28-51

[8] Martinez-Gutierrez, R.: Methodology of the fifth systemic helix for the development of public sector policies. J. Compet. Stud. 22(3–4), 147+ (2014). https://go.gale.com/ps/anonymous?id=GALE%7CA427666157&sid=googleScholar&v=2.1&it=r&linkaccess=abs&issn=23304103&p=AONE&sw=w

[9] Foundation for the Circular Economy (s. f). http://economiacircular.org/

[10] International trade and the circular economy in Latin America and the Caribbean https://www.cepal.org/es/publicaciones/46618-comercio-internacional-la-economia-circular-america-latina-caribe

[11] Martinez-Gutierrez R., Solis-Quinteros M.M., Sanchez-Hurtado C., Carey-Raygoza C.E. (2021) Challenges for an Observatory of the 2030 Goals, SDG and Social Economy, in Northern Mexico. In: Goonetilleke R.S., Xiong S., Kalkis H., Roja Z., Karwowski W., Murata A. (eds) Advances in Physical, Social & Occupational Ergonomics. AHFE 2021. Lecture Notes in Networks and Systems, vol 273. Springer, Cham. https://doi.org/10.1007/978-3-030-80713-9_24

[12] International trade and the circular economy in Latin America and the Caribbean https://www.cepal.org/es/publicaciones/46618-comercio-internacional-la-economia-circular-america-latina-caribe

[13] Suazo, B. (2017). Economía Circular en Chile: Alcances, problemas y desafíos en la gestión de la ley REP. [Seminario para el título de Ingeniero Comercial, Mención Administración. Universidad de Chile, Facultad de Ciencias Económicas y Administrativas]. http://repositorio.uchile.cl/handle/2250/146815

[14] Martinez-Gutierrez R., Solis-Quinteros M.M., Ibarra-Estrada M.E., Hurtado-Sanchez C., Carey-Raygoza C.E., Chavez-Ceja B. (2022) Observatory for the Development of 2030 Goals and the Circular Economy in Baja California. In: Ahram T., Taiar R. (eds) Human Interaction, Emerging Technologies and Future Systems V. IHIET 2021. Lecture Notes in Networks and Systems, vol 319. Springer, Cham. https://doi.org/10.1007/978-3-030-85540-6_163

[15] Castillo, P. (2018). Diseño metodológico para investigar el estado actual de la economía circular en Colombia. [Tesis de Maestría, Pontificia Universidad Javeriana] Repositorio Institucional Pontificia Universidad. http://hdl.handle.net/10554/41653

[16] Hoja de ruta para un Chile Circular al 2040, Ministerio del Medio Ambiente, Gobierno de Chile https://economiacircular.mma.gob.cl/hoja-de-ruta/

[17] Institut Montaigne. (2016). The circular economy: reconciling economic growth with the environment. https://www.institutmontaigne.org/en/publications/circular-economy-reconciling-economic-growth-environment

[18] Arroyo, R. (2018). The circular economy as a factor of sustainable development of the productive sector. INNOVA Research Journal, 3(12), 78-98. http://revistas.uide.edu.ec/index.php/innova/index

[19] Economía Circular Global: desafío global en marcha https://sig-implementacion.com/iso-14001/economia-circular-global-desafio-mundial/

[20] Salud COVID-19 https://coronavirus.gob.mx/informacion-accesible/

[21] Punto de acuerdo para incorporar preceptos de economía circular al Plan Estatal de Desarrollo en el Gobierno del Estado de Baja California, México https://diariotijuana.info/2022/01/presenta-roman-cota-punto-de-acuerdo-para-incorporar-preceptos-de-economia-circular-al-plan-estatal-de-desarrollo

[22] Monreal, R., Bolaños-Cacho, R. (2019). Iniciativa con proyecto de Decreto por el que se aprueba la Ley general de economía circular. Senado Morena Gobierno de México. https://morena.senado.gob.mx/2019/10/28/iniciativa-con-proyecto-de-decreto-queexpide-la-ley-general-de-economia-circular/

[23] Alarcón, M.A. & Álvarez, J.F. (2020): "El Balance Social y las relaciones entre los Objetivos de Desarrollo Sostenible y los Principios Cooperativos a través de un Análisis de Redes Sociales", CIRIEC- Spain, Journal of Public, Social and Cooperative Economy, 99, 57-87. DOI: 107203/CIRIEC-E.99.14322.